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ABSTRACT

This report examines the achievement and enrollment of students at the Central Computers Unlimited Magnet High School in Kansas City, Missouri, through its third year of operation. The school offers special emphasis in computer science and technology including programming, maintenance, and operations. The evaluation design focuses on the effectiveness of the magnet program in terms of achievement outcomes, as measured by Tests of Achievement and Proficiency (TAP) and the Missouri Mastery and Achievement Test (MMAT), and progress in court-ordered desegregation. Achievement performance was examined for a ninth grade cohort and the TAP scores of the Central Computer high school students were compared statistically to a random sample of students in other district high schools. Progress in court-ordered desegregation was measured by enrollment data that were reported to the district. The results of this evaluation show that reading and math achievement scores for a cohort of students who started at Central rose slightly during the time of the study. Students from other magnet high schools had higher achievement scores than Central students, but the differences were not statistically significant. Progress toward attaining an enrollment of 60% minority, 40% non-minority students has been made at a minimum of 2% each year. Six tables and three figures display the results of data analyses. (ALF)

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Achievement and Enrollment Evaluation of the Central Computers Unlimited Magnet High School

1990-1991

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January 1992

IR015633

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ACHIEVEMENT AND ENROLLMENT EVALUATION OF THE CENTRAL COMPUTERS UNLIMITED MAGNET HIGH SCHOOL

1990 - 1991

Introduction

The Central Computers Unlimited Magnet High School has completed the third year of operation as part of the Kansas City, Missouri, School District's *Long-Range Magnet School* Plan (Hale & Levine, 1986), hereafter referred to as the Long-Range Plan. Typically, a summative evaluation occurs in the third year of program implementation. However, pertinent data were insufficient for a longitudinal evaluation of the Computers Unlimited program at Central High School. Therefore, achievement and enrollment summaries are reported, and a summative evaluation will occur during the 1991-1992 year. The presentation of these data through three years of implementation follows a brief discussion of the computer program and a description of the evaluation design.

Program Description

The mission of Central Computers Unlimited Magnet High School is to provide excellent educational opportunities in a racially integrated, multi-cultural environment which offers special emphasis for students interested in computer science and technology. The basic core curriculum and individually chosen electives utilize state-of-the-art computer equipment for academic presentation. Students can learn expertise in computer applications, including programming, maintenance and operations.

The new building is scheduled for completion and occupancy August, 1991.

Evaluation Design

This report examines the achievement and enrollment of students in the magnet program at the Computers Unlimited high school through three years of implementation. The emphasis of the report is on effectiveness of the magnet program in terms of achievement outcomes, as

measured by Tests of Achievement and Proficiency (TAP) and the Missouri Mastery and Achievement Test (MMAT), and progress in court-ordered desegregation.

Achievement performance for the high school computer magnet students will be examined for a ninth grade cohort. Also, TAP test scores of Central Computer high school students will be compared statistically to a random sample of students in other district high schools. These analyses will elucidate achievement trends throughout three years of implementation and identify differences and similarities in achievement between computer magnet students and their district peers.

Enrollment data for academic years 1986-1987 through 1990-1991 are reported. Central High School, formerly a traditional school, was converted to a magnet school beginning the 1987-1988 school year. Traditional schools with a greater than 60% miniority student population, such as Central High School, are expect to progress by at least 2% to a 60% minority enrollment in each grade every year after becoming a magnet school. The year previous to magnet conversion, 1986-1987, is considered the pre-implementation or baseline year and will give perspective to the magnet data. The reported enrollment figures are taken from student membership data reported to the district on the fourth Wednesday in September of the school year.

Results

Achievement

Tests of Achievement and Proficiency (TAP). Scores in the subtests of reading, language, and math for minority and non-minority students are reported as percentile ranks based on mean grade equivalent scores at each grade level. Trends in TAP scores through time are examined using cohort analyses. A chart of freshmen students in 1988 are followed for three years (through the eleventh grade). Also, the academic performance of Central Computer students are compared to a sample of students from other magnet high schools using analysis of covariance.

The reader is cautioned in comparing minority student scores with non-minority scores. Essentially, there were not any non-minority students enrolled at Central High prior to magnetization in 1988. Currently the total is 72, and the majority of these are in the lower grades. Statistically, it is difficult to draw an accurate comparison from so few students, because several students who score very high or very low can make a strong influence on the average

score. In addition, the percent of enrolled students with test scores was sometimes low, either due to drop outs or students simply not coming to be tested (Table 1).

For the spring 1990 testing, the percent of students with test scores ranged from 60% (3 out of 5 non-minority twelfth grade students) to 100% (2 of 2 non-minority eleventh grade students). Considering the spring 1991 testing, the percent of students with test scores ranged from 0% (the only non-minority twelfth grade student) to 80% (645 of 811 minority tenth grade students). Overall, for spring 1990, 74% of the non-minority students and 76% of the minority students had test scores; and for spring 1991, 57% of the non-minority students and 80% of the minority students had test scores.

Reading. As Table 2 shows reading percentile ranks did not improve from 1990 to 1991, except for twelfth grade students (all minority) which increased from a percentile rank of 26 to a rank of 34, and tenth grade (both minority and non-minority) which improved from 31 to 33. Ninth and eleventh grade percentile ranks were slightly lower in 1991 than 1990. All grades scored below the district norm for their grade.

Table 1
Central Computers Unlimited Magnet High School
Percent of Enrolled Students with Achievement Test Data
1989 - 1990 & 1990 - 1991

	1989 - 1990			1990 - 1991		
Grade **Ethnic Group**	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested
Ninth						
Minority	267	207	78%	225	185	85%
Non-Minority	33	26	79%	28	17	53%
Tenth						
Minority	241	169	70%	260	203	80%
Non-Minority	13	8	62%	28	15	65%
Eleventh						
Minority	136	97	71%	198	160	77%
Non-Minority	2	2	100%	13	8	62%
Twelfth						
Minority	128	115	90%	128	97	67%
Non-Minority	5	3	60%	1	0	0%
School Total						
Minority	772	588	76%	811	645	80%
Non-Minority	53	39	74%	70	40	57%
All Students	825	627	76%	881	685	78%

Note:: Percentages are rounded to the nearest whole percent. 1990 enrollment figures are from *January 30, 1990 Student Membership*, (KCMSD Research Office). 1991 enrollment figures are from *January 31, 1991 Student Membership*, (KCMSD Research Office, 1991).

Table 2

Central Computers Unlimited Magnet High School
Test of Achievement and Proficiency
Percentile Ranks Based on Mean Grade Equivalents
Spring 1988 through Spring 1991

Group	Reading					Math					Written Expression				
Ethnic Group	1988	1989	1990	1991	Dist 1991	1988	1989	1990	1991	Dist 1991	1988	1989	1990	1991	Dist 1991
Ninth	23	25	37	36	41	28	29	38	31	37	43	44	46	45	45
Minority	23	25	35	34		28	29	36	28		43	44	45	44	
Non-Minority	--	21[a]	56	58		--	32[a]	55	58		--	44[a]	50	51	
Tenth	24	27	31	33	43	32	31	31	33	40	38	39	40	42	44
Minority	24	26	31	32		32	30	32	30		38	39	40	41	
Non-Minority	--	--[b]	13[a]	52		--	--[b]	20[a]	53		--	--[b]	36[a]	53	
Eleventh	27	27	37	32	40	31	33	38	35	40	27	22	41	36	42
Minority	27	25b	34	31		31	32	37	34		27	20	40	36	
Non-Minority	--[b]	65[a]	--[b]	39[a]		--[b]	57[a]	--[b]	47[a]		--	--[b]	--[b]	33[a]	
Twelfth	25	34	26	34	39	34	38	32	37	39	25	30	38	38	41
Minority	25	34	26	34		34	38	32	37		25	30	37	38	
Non-Minority	--[b]	--	--[b]	--		--[b]	--	--[b]	--		--[b]	---	--[b]	--	

Note: Percentile ranks were converted from mean grade equivalent scores.
a Percentile rank based upon less than 10 students.
b Scores not reported as less than four students present.

Math. Math percentile ranks followed the same pattern as those for reading with tenth and twelfth grade ranks improving from 1990 to 1991. The ninth grade percentile rank decreased from 37 in 1990 to 31 in 1991 and eleventh grade decreased from 37 to 35. All grades were below the district norm for their grade.

Written Expression. Performance on this subtest was similar to math and reading. Tenth and twelfth grade ranks were higher in 1991 than in 1990 and ninth and eleventh grade ranks were lower in 1991 than 1990. Ninth grade students in 1991 obtained percentile ranks equal to the district norm. Tenth and twelfth grade students were two percentile points below the district norm. The eleventh grade rank for 1991 was six percentile points below the 1991 district norm.

In order to examine longitudinal achievement trends among minority and non-minority students at Central High Computers Unlimited magnet, a cohort of ninth grade students were tracked across the three years of program implementation. Minority and non-minority per-

formances are of interest, yet non-minority enrollments were too few to permit cohort tracking earlier than 1988. The data are presented graphically in Figures 1 through 3.

Of the 260 minority students and 24 non-minority students who were in the ninth grade in 1988, 98 minority students (38%) and five non-minority students (21%) had achievement data in 1989 and 1990. The small size of the cohort could be attributed to attrition and the low percent of the enrolled students with test scores.

Figure 1 indicates that minority reading achievement increased slightly from a ninth grade percentile rank of 30 to 32 in the tenth grade and stayed about the same for the eleventh grade. Ninth grade non-minority reading achievement was very low (percentile rank 14) and decreased to a rank of ten in the tenth grade. However, non-minorities ended the eleventh grade at a percentile rank of 39.

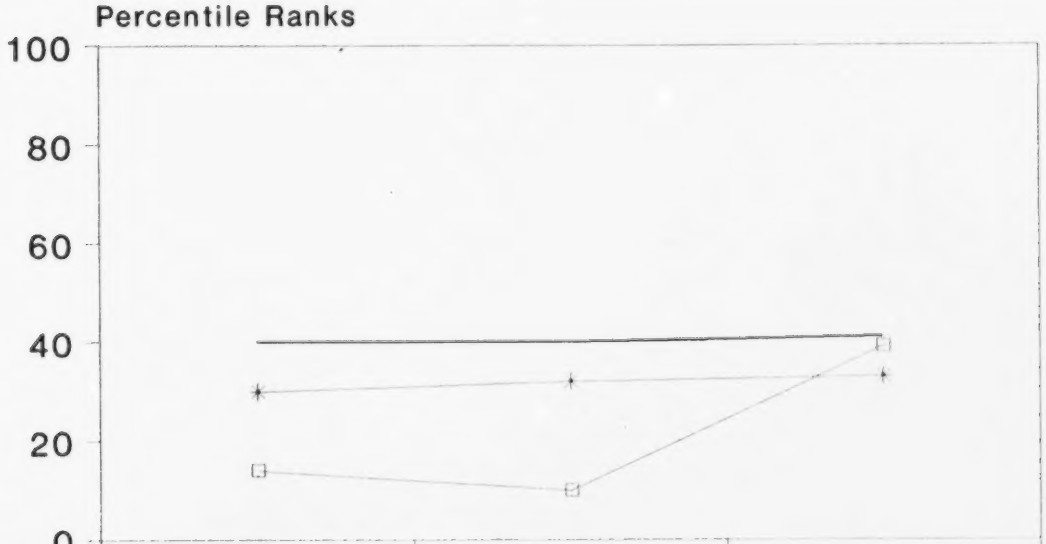
Math achievement (Figure 2) for minority students went from a percentile rank of 35 (ninth grade) to 34 (tenth grade) and ended at 38 in the eleventh grade. Non-minority achievement went from a ninth grade percentile rank of 40 to a tenth grade rank of 11 and also ended at a percentile rank of 38 for the eleventh grade.

Written expression achievement (Figure 3) decreased from ninth grade to eleventh grade for both minority and non-minority students. Ninth grade minority writing achievement started at a percentile rank of 48 and decreased to a tenth grade rank of 42 and ended at a rank of 39 for eleventh grade. Non-minority writing achievement started at a rank of 48 (ninth grade), decreased to a rank of 42 (tenth grade), and they ended the eleventh grade with a percentile rank of 39.

In order to explore differences between Central Computer students and other district high school students, a random sample of the district's high school students was taken at each grade level to serve as a comparison group. An approximately equal number of students was sampled at each grade. In order to compensate for pre-existing ability differences between the Central Computer students and other high school students when they entered the 1990 - 1991 school year, their most recent Cognitive Abilities Test (CAT) scores were used as covariates for ninth, tenth and eleventh grades in an analysis of covariance (ANCOVA). As such, adjusted scores were used for the analyses. CAT scores currently kept in the testing file are available for three previous years. Thus twelfth grade students, who were in the ninth grade in 1988, did not have CAT scores available for an analysis of covariance. An analysis of variance (ANOVA) was used to explore differences between twelfth grade Central Computer students and other twelfth

FIGURE 1

TAP Reading Achievement
1988 Ninth Grade Cohort Central Computer

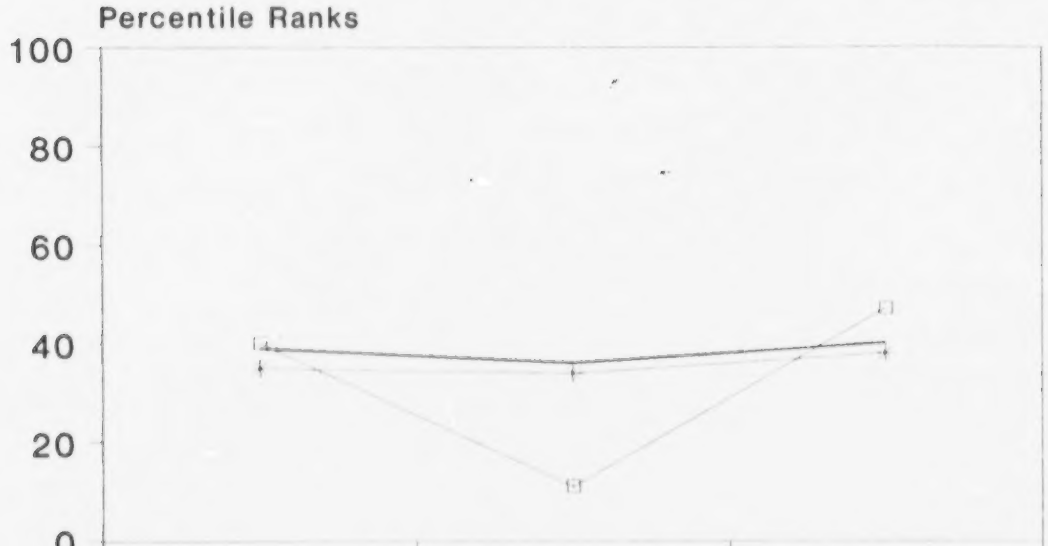


	Ninth	Tenth	Eleventh
Minority	30	32	33
Non-minority	14	10	39
District	40	40	41

Note:Percentile ranks were converted from mean grade equivalent scores.

FIGURE 2

TAP Math Achievement
1988 Ninth Grade Cohort Central Computer

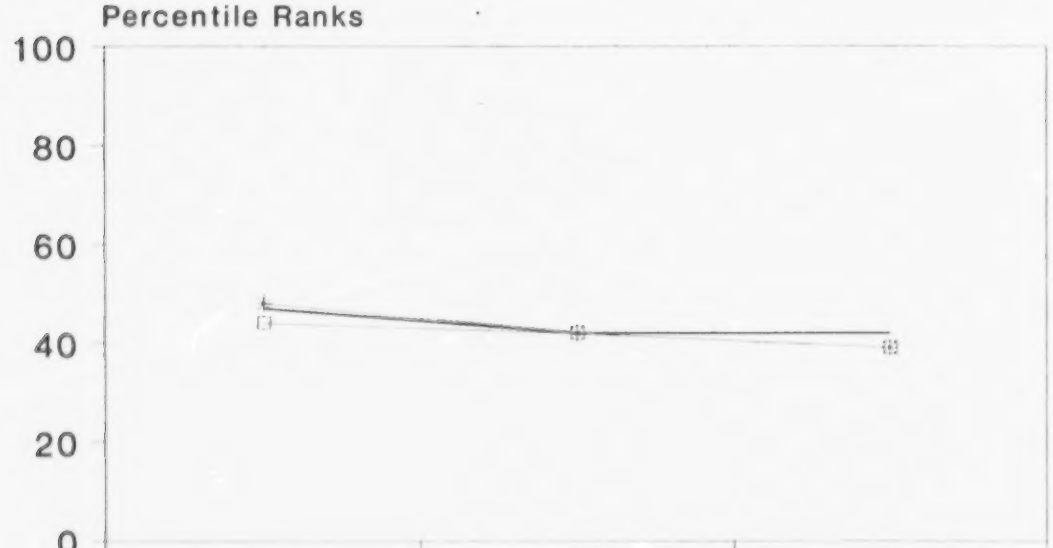


	Ninth	Tenth	Eleventh
Minority	35	34	38
Non-minority	40	11	47
District	39	36	40

Note:Percentile ranks were converted from mean grade equivalent scores.

FIGURE 3

TAP Written Expression Achievement
1988 Ninth Grade Cohort Central Computer



	Ninth	Tenth	Eleventh
Minority	48	42	39
Non-minority	44	42	39
District	47	42	42

Note:Percentile ranks were converted from mean grade equivalent scores.

grade high school students. As such, unadjusted scores were used for the analysis. Adjusted and unadjusted mean grade equivalent scores were converted to percentile ranks for presentation. Summary data for these analyses can be found in Table 3 (the footnote at the end of the table explains the determination of significant differences between the groups).

No significant differences were found between the Central Computer students and the comparison students at any grade level in reading. Although the comparison students scored three or four percentile points above the Central Computer students for all grade levels, these differences were not found to be statistically significant.

Levels of math achievement for the Central Computer students were comparable to the comparison students. No significant differences were found. Comparison students scored slightly higher than Central Computer students at the ninth and tenth grade levels. At the eleventh grade, Central Computer students had an adjusted score one percentile rank above the comparison students, and at the twelfth grade, the students in the two groups had identical percentile ranks.

Central Computer students and comparison students had comparable written achievement scores. Percentile ranks were within three points of each other for all grades with Central ninth grade students performing two percentile points higher than the comparison students.

Missouri Mastery & Achievement Tests (MMAT). As Table 4 shows, Central Computer students, scored below the district and the state norms for all content areas. Scores were 15 scale score points below the district norm for math and 16 scale score points below the district norm in English/language arts.

Degrees of Reading Power (DRP). Ninth grade Central Computer students obtained a Degrees of Reading Power mean unit score of 73 which was 10 scale units above the district mean scale unit score of 63. The DRP measures reading comprehension and is used primarily as a diagnostic test to match appropriate instructional materials with a student's reading level.

Enrollment

Actual enrollment at Central was compared to program capacity data by grade. Enrollment data were from the September 26, 1990 Student Membership report (Research Office, 1990). Program capacity data were used by the district Admissions Office to place students in schools.

As Table 5 shows, Central was not enrolled to capacity. Overall, 86% of the program's capacity was met. Ninth grade was filled to capacity and tenth grade was near capacity with

Table 3

Central Computers Unlimited Magnet High School
1991 TAP Reading, Math, and Written Expression Covariance Analysis
with a Randomly Selected Magnet High School Comparison Group

Test Grade Means	Central Computer Percentile Rank	Comparison Group Percentile Rank	Probability Level
Reading			
Ninth Grade			
Unadjusted	36	41	
Adjusted	37	40	.114
Tenth Grade			
Unadjusted	33	41	
Adjusted	36	39	.200
Eleventh Grade			
Unadjusted	33	45	
Adjusted	38	42	.085
Twelfth Grade [a]			
Unadjusted	34	37	.331
Math			
Ninth Grade			
Unadjusted	34	32	
Adjusted	31	34	.373
Tenth Grade			
Unadjusted	33	39	
Adjusted	34	36	.204
Eleventh Grade			
Unadjusted	38	43	
Adjusted	41	40	.940
Twelfth Grade [a]			
Unadjusted	37	37	.892
Written Expression			
Ninth Grade			
Unadjusted	45	43	
Adjusted	45	43	.199
Tenth Grade			
Unadjusted	42	45	
Adjusted	43	44	.600
Eleventh Grade			
Unadjusted	38	47	
Adjusted	41	43	.246

Table 3 (cont.)

Central Computers Unlimited Magnet High School
1991 TAP Reading, Math, and Written Expression Covariance Analysis
with a Randomly Selected Magnet High School Comparison Group

Test Grade Means	Central Computer Percentile Rank	Comparison Group Percentile Rank	Probability Level
Written Expression (cont.)			
Twelfth Grade [a]			
Unadjusted	37	40	.193

Note: Percentile ranks were converted from mean grade equivalent scores.

[a] The Cognitive Abilities Test given to 9th grade students in 1988, who are now in the twelfth grade in 1991, was not available for this analysis.

[b] Difference is determined to be found between the two groups on this test if the probability level is less than or equal to .05. Analyses were done using grade equivalent scores. For presentation, these scores were converted to percentile ranks. The adjusted mean represents a statistical estimate of the students performance on the TAP assuming that the students had identical 9th grade Cognitive Abilities means. This adjusted mean is computed during an analysis of covariance procedure.

Table 4

Central Computers Unlimited Magnet High School
Missouri Mastery & Achievement Test Scores: Grade 10
School, District and State Scores
Spring 1991

School	Science	Math	English/ Language Arts	Social Studies Civics
Central	263	263	257	253
District	282	278	273	268
State	327	326	313	302

93% of the spaces filled. Eleventh and twelfth grades were enrolled to 72% and 75% of their capacities, respectively.

The achievement of court-ordered desegregation in the Kansas City, Missouri School District is a central feature of the magnet school plan. The percent of minority and non-minority students in each grade is expected to be 60% minority and 40% non-minority (60/40).

Table 5

Central Computers Unlimited Magnet High School
Enrollment and Program Capacity by Grade
1991 - 1992

Grade	Program[a] Capacity	Actualb Enrollment	Difference N	Percent of Capacity
Ninth	250	251	+ 1	100%
Tenth	300	279	-21	84%
Eleventh	304	220	-84	72%
Twelfth	158	118	-40	75%
Total	1012	868	-144	86%

Note: Percentages are rounded to the nearest whole percent.

[a] Program capacity utilized by the admissions office when placing students in magnet programs.

[b] From *September 26, 1990 Student Membership* (KCMSD Research Office, 1990).

If existing schools, keeping the same grade structure at program start-up, cannot reach the 60% minority/40% non-minority enrollment goal, progress is still expected. Progress may be achieved with an annual 2% enrollment movement toward the 60/40 enrollment ratio. Table 6 presents minority and non-minority enrollment figures for Central High for the years 1987 through 1990. Overall, Central experienced an annual 2% enrollment modification toward 60/40 enrollment composition. Individual grades varied in progress toward 60/40 enrollment ratio. Ninth grade minority enrollment, which started at 100% minority in 1987, made progress to 92% minority in 1988 but only changed to 91% in 1989 and now stands with a minority enrollment of 87%. Tenth and eleventh grades also started with 100% minority enrollment in 1987. Both grades experienced at least a 2% modification toward the 60/40 enrollment goal. Twelfth grade, which was 99% minority in 1987, had only a 1% reduction in minority student enrollment (98%) in 1988 but improved to 96% in 1989, ending with an increase to 97% in 1989.

In tracking annual student enrollment from 1988 to 1990, some form of attrition appears to be occurring. Tenth grade non-minority enrollment for 1989 is less than half of the 1988 ninth grade non-minority enrollment. Also, eleventh grade minority enrollment for 1989 is about half of the 1988 tenth grade minority enrollment. Attrition is not as pronounced from

Table 6

Central Computers Unlimited Magnet High School
Minority and Non-Minority Enrollment
1986-1987 through 1990-1991

	Implementation Year							
Grade 2	Baseline 1987		Year 1 1988		Year 2 1989		Year 3 1990	
Ethnic Group	N	%	N	%	N	%	N	%
Ninth								
Minority	307	100%	260	92%	279	91%	218	87%
Non-Minority	0	0%	24	8%	28	9%	32	13%
Tenth								
Minority	162	100%	306	98%	254	96%	255	92%
Non-Minority	0	0%	6	2%	10	4%	23	8%
Eleventh								
Minority	223	100%	184	98%	158	96%	208	94%
Non-Minority	0	0%	4	2%	6	4%	13	6%
Twelfth								
Minority	110	99%	180	98%	144	96%	114	97%
Non-Minority	1	1%	3	2%	6	4%	4	3%
School Total								
Minority	802	100%	930	96%	835	94%	795	92%
Non-Minority	1	0%	37	4%	50	6%	72	8%

Note: Percentages are rounded to the nearest whole percent. 1987 enrollment data are from A By-School *Comparison of Student Enrollment By Race and Grade for The Years 1986-87* and *1987-88* (KCMSD, 1987) and September 24, 1987, *Junior High/Middle School Membership, Self-Contained Special Education Classes* (KCMSD 1987). 1988 enrollment figures are from *September* 28, 1988 *Student Membership KCMSD Research Office, 1988*). 1989 enrollment figures are from *September 27, 1989 Student Membership* (KCMSD Research Office, 1989). 1990 enrollment figures are from September 26,.1990 Student Membership (KCMSD Research Office, 1990).

1989 to 1990 for minority students. However, there are fewer non-minority tenth grade students in 1990 than there were ninth grade non-minority students. The same is true for eleventh grade 1989 and 1990 twelfth grade numbers. Numbers of minority students appear to be relatively constant from 1989 to 1990.

Summary

Many Central Computer high school students did not take the TAP test. Generally, for the 1989-1990 and school year, only about three-fourths of the students who were enrolled in

January of those years had test scores. For the 1990-1991 school year, of the students enrolled in January about 80% had test scores.

Reading and math achievement for a cohort of students who started at Central in the ninth grade in 1988-1989 school year and were at Central for 1989-1990 and 1990-1991 school years showed 1991 scores that were slightly higher than in 1989. Students from other magnet high schools had higher achievement scores than Central students, but the differences were not statistically significant (.05 level).

Progress at the minimum 2% has been made each year in attaining the 60% minority 40% non-minority enrollment. Overall non-minority enrollment was 4% for 1988, 6% for 1989, and 8% for 1990. Ninth, tenth and eleventh grade non-minority enrollment increased each year from 1989 through 1990. Twelfth grade non-minority enrollment increased from 1988 to 1989 but decreased from 1989 to 1990.

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